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**Our Ref. No.:** VISAP016  
**App. No.:** 09/359,083  
**Applicant:** Davis et al.

**Re:** APPEAL BRIEF

**Pages Including Cover Sheet(s):** 16

**MESSAGE:** Attached please find the following documents for filing in the above-referenced application:

- 1) Appeal Brief Transmittal (2pgs)
- 2) Appeal Brief in response to the Notice of Panel Decision dated 11/16/2006 to which a response is due February 16, 2007 with a two-month extension of time. (13pgs)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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EX PARTE DAVIS et al.

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Application for Patent

Filed: July 22, 1999

Application No. 09/359,083

FOR:

INTERNET PAYMENT, AUTHENTICATION AND LOADING SYSTEM USING  
VIRTUAL SMART CARD

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APPEAL BRIEF

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Signed: \_\_\_\_\_

*Ann Love*  
Ann Love

BEYER WEAVER LLP  
Attorneys for Appellants

Attorney Docket No. VISAP016

-i-

Application No. 09/359,083

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re application of: Davis et al.

Attorney Docket No.: VISAP016

Application No.: 09/359,083

Examiner: LIVERSEDGE, Jennifer L.

Filed: July 22, 1999

Group: 3692

Title: INTERNET PAYMENT,  
AUTHENTICATION AND LOADING SYSTEM  
USING VIRTUAL SMART CARD

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Signed: \_\_\_\_\_

Ann Lowe

**APPEAL BRIEF TRANSMITTAL  
(37 CFR 192)**

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This brief is in furtherance of the Notice of Appeal filed in this case on September 11,  
2006.

This application is on behalf of

☐ Small Entity☒ Large Entity

Pursuant to 37 CFR 1.17(f), the fee for filing the Appeal Brief is:

☐ \$250.00 (Small Entity) ☒ \$500.00 (Large Entity)

☒ Applicant(s) hereby petition for a two-month extension(s) of time to under 37 CFR  
1.136.

If an additional extension of time is required, please consider this a petition therefor.

☐ An extension for \_\_\_\_\_ months has already been secured and the fee paid therefor of  
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☒ Applicant(s) believe that no (additional) Extension of Time is required; however, if it is determined that such an extension is required, Applicant(s) hereby petition that such an extension be granted and authorize the Commissioner to charge the required fees for an Extension of Time under 37 CFR 1.136 to Deposit Account No. 500388 (Order No. VISAP016).

## Total Fee Due:

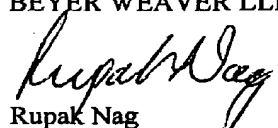
Appeal Brief fee	\$500.00
Extension Fee (if any)	\$450.00

Total Fees Due	\$950.00
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☒ The Commissioner is authorized to charge \$950.00 for the filing fee and two-month extension of time fee to our Deposit Account No. 500388 (Order No. VISAP016).

☒ Please charge any additional fee(s) or credit any overpayment to Deposit Account No. 500388, (Order No. VISAP016). Two copies of this transmittal are enclosed.

Respectfully submitted,  
BEYER WEAVER LLP

  
Rupak Nag  
Reg. No. 37,493

P.O. Box 70250  
Oakland, CA 94612-0250  
(612) 252-3335

**I. REAL PARTY IN INTEREST**

The real party in interest is Visa International Service Association, 900 Metro Center Blvd., Foster City, CA 94308.

**II. RELATED APPEALS AND INTERFERENCES**

There are no related appeals or judicial proceedings known to the Appellants.

**III. STATUS OF CLAIMS**

Allowed claims:	None
Claims objected to:	None
Claims rejected:	1-8 and 34-43.

**IV. STATUS OF AMENDMENTS**

No amendments were filed following the Office Action of May 9, 2006.  
Appellants filed a Pre-Appeal Brief Request for Review on September 11, 2006 and a Notice of Panel Decision was mailed to Appellants on November 16, 2006.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention provides an online purchase and load (OPAL) server that implements virtual smart cards. It provides software emulation of smart cards and smart card readers that operate with current Internet payment and loading systems. Advantageously, components of Internet payment and loading systems (such as the merchant server and payment server) and techniques for processing payment and load transactions may remain the same when using the present invention. Use of the OPAL server of the present invention is transparent to merchants on the Internet. In one embodiment, a smart card and its associated card reader are emulated on a remotely-located OPAL server computer, thus obviating the need for physical smart cards and smart

Attorney Docket No. VISAP016                      -1-                      Application No. . 09/359,083

card readers. The existing client terminal acts as a pass-through device that is transparent to a user, a merchant server or a bank server.

This enhancement to Internet payment and loading systems provides many advantages. For example, the present invention accelerates the adoption of the systems in electronic markets by circumventing the cost and distribution issues associated with physical cards and card readers. When infrastructure to support physical smart cards and card readers is developed, the present invention can be replaced using the hardware approach and/or be used in conjunction with the actual hardware. The enhanced system of the present invention also provides a mechanism to address the low value (less than \$10.00) electronic commerce market in a rapid manner using an infrastructure that is easily scalable. By remaining integrated with the hardware-based approach, the present invention provided the means to accelerate development of Internet payment and loading systems and to create a base of consumers that may be converted to the hardware approach when the required hardware is more widely available.

Claim 1 recites an on-line purchase and load (OPAL) server for performing a transaction over a network using a virtual smart card. One component of the server is a virtual smart card database having multiple records, each record including a virtual card identifier and a balance amount that corresponds to a single virtual smart card. Another component of the server is a smart card emulator. This is a software module that receives smart card commands and processes them in conjunction with the virtual smart card database and a hardware security module. Another component of the server is a pseudo card reader module. This is also a software module that receives smart card commands over a network, such as the Internet, and relays the commands to the smart card emulator. In this manner, the OPAL server performs a transaction over the network using one of the records in the virtual smart card database. Figure 4, pages 17- 21.

Claim 41 also recites an OPAL server for performing a transaction over a network using a virtual smart card. A component of the server is a virtual smart card database having multiple records, each record including a virtual card identifier and a balance corresponding to a single virtual smart card. Another component is a smart card emulator. This is a software component that receives smart card commands and processes the commands in conjunction with the virtual smart card database and a hardware security module. The smart card emulator is also configured to send a load request message to a

load server. The load request message indicates or contains a virtual smart card identifier and a load amount for a corresponding virtual smart card. The load amount indicates an amount of money to load onto the respective virtual smart card. Another component is a pseudo card reader module. This is also a software module that receives smart card commands over a network, such as the Internet, and relays the commands to the smart card emulator. The OPAL server performs a transaction over the network using one of the records in the virtual smart card database. Figure 4, pages 17-21; Figure 18A, page 46.

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The rejections presented for review are as follows:

A. The rejections of claims 1-8 AND 34-43 under 35 U.S.C. § 102 (e) as being anticipated by U.S. Patent No. 6,282,522 issued to *Davis et. al.*

## VII. ARGUMENT

With respect to Ground A above, the rejected claims are argued as a single group.

### A. The Final Office Action Applies a Standard for Anticipation That Is Not Legally Correct.

Applicant's reply on March 22, 2006 argued that the *Davis* reference does not teach or suggest "a smart card emulator" or "a pseudo card reader module" as required by claims 1 and 41 because there is no enabling description of a "smart card emulator" or "a pseudo card reader module" in *Davis*. In response, the Final Office Action stated that any disclosure in a reference may serve as anticipatory prior art (Final Office Action dated May 9, 2006, page 9). The Office Action stated: "...any disclosure serves as prior art and the disclosure as part of the *Davis* description that other forms including a virtual card may also be one means of the invention (column 11, lines 10-14), establishes a virtual card as prior art within the disclosure of the invention and the description of functionality therein."

The *Davis* reference states that "the functionality of stored value card 5 may be implemented in software on client terminal 204, that is, card 5 may be a 'virtual' card." This brief mention of a "virtual card" falls far short of providing an enabling description of a "virtual smart card" as described and claimed in the present application and may not be relied upon for anticipation.

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Application No. . 09/359,083



Applicant strenuously objects to the notion that "any disclosure" in a reference can serve as a basis for anticipation and asserts that the proper standard is that the disclosure in a reference must be enabling in order to be anticipatory.

In the present situation, the requirement that a description be enabling is important because Applicant is asserting that a single phrase that mentions a "virtual card" in *Davis* is not enabling and thus cannot anticipate the element of "a smart card emulator" or "a pseudo card reader module" as required by claims 1 and 41.

Section 2121.01 of the MPEP states that "the standard test is whether a reference contains an enabling disclosure," and that "mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation."

In addition to the MPEP, case law further supports Applicant's position that the reference must be enabling to be anticipatory. In order to support a rejection under §102 or §103, a prior art reference must be enabling as conveyed by the United States Supreme Court:

Patented inventions cannot be superseded by the mere introduction of a foreign publication of the kind, though of prior date, unless the description and drawings contain and exhibit a substantial representation of the patented improvement, in such full, clear, and exact terms as to enable any person skilled in the art or science to which it appertains, to make, construct, and practice the invention to the same practical extent as they would be enabled to do if the information was derived from a prior patent. Mere vague and general representations will not support such a defense, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention, and to carry it into practical use. Whatever may be the particular circumstances under which the publication takes place, the account published, to be of any effect to support such a defense, must be an account of a complete and operative invention capable of being put into practical operation.

(*Seymour v. Osbourne*, 78 U.S. 516, 555 (1870)).

Further, knowledge possessed by one skilled in the art is taken together with the disclosure of the reference to determine if the public has possession of the invention. *In re LeGrice*, 133 USPQ 365, 371-376 (CCPA 1962), (quoting *Seymour* and citing patent treatises).

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Application No. . 09/359,083

As noted above, in the present situation the requirement that a description be enabling is important because Applicant is asserting that a single phrase that mentions a "virtual card" is not enabling and thus cannot anticipate elements of claims 1 and 41. Recitation of this single phrase simply fails to enable a concept as complex as using software to emulate a smart card.

Because the Final Office Action has used a legally incorrect standard for anticipation, it is requested that the Final Action be withdrawn and that a new action be issued using the correct standard, or that a new search be performed.

#### **B. Conclusion**

In view of the foregoing, all of the claim rejections under 35 U.S.C. § 102 (e) as being anticipated by *Davis* cannot stand for at least the reasons discussed. The Examiner's reliance on *Davis* is misplaced, because the Examiner has failed to apply the correct legal standard for a reference to qualify as anticipatory.

In view of the foregoing, Appellants respectfully request that the Board reverse the Examiner's rejection of all pending claims. In addition, Appellants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Respectfully Submitted,

BEYER WEAVER LLP



Rupak Nag  
Registration No. 37,493

BEYER WEAVER LLP  
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Telephone: (612) 252-3335

## VIII. CLAIMS APPENDIX

### CLAIMS ON APPEAL

1. An on-line purchase and load (OPAL) server for performing a transaction over a network using a virtual smart card, said OPAL server comprising:
  - a virtual smart card database having a plurality of records, each record including a virtual card identifier and a balance corresponding to a single virtual smart card;
  - a hardware security module;
  - a smart card emulator that receives smart card commands and processes said commands in conjunction with said virtual smart card database and said hardware security module; and
  - a pseudo card reader module that receives said smart card commands over said network and relays said commands to said smart card emulator, whereby said OPAL server performs a transaction over said network using one of said records in said virtual smart card database.
2. An OPAL server as recited in claim 1 wherein said virtual card database further includes purchase algorithm identifiers, and wherein said hardware security module includes a plurality of purchase algorithms that are identified for use by one of said purchase algorithm identifiers, whereby said hardware security module may be used to perform cryptographic functions associated with a purchase.
3. An OPAL server as recited in claim 1 further comprising:
  - a user verification module that verifies a user accessing said OPAL server and generates a user identifier, said user identifier being suitable to identify one of said virtual smart card records in said card database.

4. An OPAL server as recited in claim 1 wherein said smart card emulator and said pseudo card reader module are implemented as a single software module.
5. An OPAL server as recited in claim 1 wherein said network is an internet over which said OPAL server communicates with a merchant server and a payment server to transact a purchase.
6. An OPAL server as recited in claim 1 wherein said network is an internet over which said OPAL server communicates with a bank server and a load server to load value onto said virtual smart card.
7. An OPAL server as recited in claim 1 wherein said network is an internet over which said OPAL server communicates with a web server and an authentication server to authenticate a user.
8. An OPAL server as recited in claim 1 wherein said OPAL server communicates over said network with a payment gateway for funding account authorization and clearing.

Claims 9-33 canceled.

34. An OPAL server as recited in claim 1 wherein said smart card emulator is suitable for retrieving one of said records from said virtual smart card database, increasing or decreasing said balance of said record, and then returning said record to said virtual smart card database.

35. An OPAL server as recited in claim 1 wherein each record of the virtual smart card database also includes a funding account number wherein the funding account number identifies an account that contains a monetary amount that can be loaded onto a virtual smart card.

36. An OPAL server as recited in claim 1 wherein the OPAL server is further configured to receive a purchase request message from a client terminal, wherein the purchase request message indicates a good or service to be purchased by a user, a user identifier, and a user password.

37. An OPAL Server as recited in claim 36 wherein the OPAL server is further configured to send a draw request message to a payment server, wherein the draw request message indicates an amount of money required to purchase the good or service and a merchant identifier.

38. An OPAL Server as recited in claim 37 wherein the OPAL server is further configured to receive a debit command from the payment server, wherein the debit command indicates an amount of money to debit from a respective virtual smart card.

39. An OPAL Server as recited in claim 38 wherein the smart card emulator is configured to debit itself in response to the debit command by the amount of money indicated in the debit command.

40. An OPAL Server as recited in claim 38 wherein the OPAL server is further configured to send a debit response message to the client terminal, wherein the debit response message informs the user either that the amount of money has been debited from the smart card emulator or that money has not been debited from the smart card emulator due to a lack of sufficient funds.

41. An on-line purchase and load (OPAL) server for performing a transaction over a network using a virtual smart card, said OPAL server comprising:

a virtual smart card database having a plurality of records, each record including a virtual card identifier and a balance corresponding to a single virtual smart card;

a hardware security module;

a smart card emulator that receives smart card commands and processes said commands in conjunction with said virtual smart card database and said hardware security module, the smart card emulator also configured to send a load request message to a load server, wherein the load request message indicates a virtual smart card identifier and a load amount for a respective virtual smart card, the load amount indicating an amount of money to load onto the respective virtual smart card; and

a pseudo card reader module that receives said smart card commands over said network and relays said commands to said smart card emulator, whereby said OPAL server performs a transaction over said network using one of said records in said virtual smart card database.

42. An OPAL server as recited in claim 41 wherein the OPAL server is configured to receive a load command from a load server wherein the amount of money indicated in the load request message is loaded onto the respective virtual smart card.

43. An OPAL server as recited in claim 42 wherein the smart card emulator is configured to send a load response message to a client terminal, wherein the load response message informs a user that the amount of money has been loaded onto the respective virtual smart card.

**IX. EVIDENCE APPENDIX**

NONE

**X. RELATED PROCEEDINGS APPENDIX**

NONE



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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re application of: Davis et al.

Attorney Docket No.: VISAP016

Application No.: 09/359,083

Examiner: LIVERSEDGE, Jennifer L.

Filed: July 22, 1999

Group: 3692

Title: INTERNET PAYMENT,  
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Ann Lowe

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P.O. Box 1450  
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This application is on behalf of

☐ Small Entity☒ Large Entity

Pursuant to 37 CFR 1.17(f), the fee for filing the Appeal Brief is:

☐ \$250.00 (Small Entity) ☒ \$500.00 (Large Entity)☒ Applicant(s) hereby petition for a two-month extension(s) of time to under 37 CFR  
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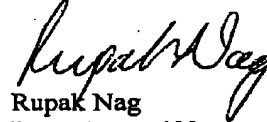
Appeal Brief fee	\$500.00
Extension Fee (if any)	\$450.00

Total Fees De	\$950.00
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**Telephone:** (612) 252-3335  
**Fax No.:** (612) 825-6304

**Our Ref. No.:** VISAP016  
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Signed: \_\_\_\_\_

*Ann Love*  
Ann Love

**BEYER WEAVER LLP  
Attorneys for Appellants**

Attorney Docket No. VISAP016

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**III. STATUS OF CLAIMS**

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Claims objected to: None

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card readers. The existing client terminal acts as a pass-through device that is transparent to a user, a merchant server or a bank server.

This enhancement to Internet payment and loading systems provides many advantages. For example, the present invention accelerates the adoption of the systems in electronic markets by circumventing the cost and distribution issues associated with physical cards and card readers. When infrastructure to support physical smart cards and card readers is developed, the present invention can be replaced using the hardware approach and/or be used in conjunction with the actual hardware. The enhanced system of the present invention also provides a mechanism to address the low value (less than \$10.00) electronic commerce market in a rapid manner using an infrastructure that is easily scalable. By remaining integrated with the hardware-based approach, the present invention provided the means to accelerate development of Internet payment and loading systems and to create a base of consumers that may be converted to the hardware approach when the required hardware is more widely available.

Claim 1 recites an on-line purchase and load (OPAL) server for performing a transaction over a network using a virtual smart card. One component of the server is a virtual smart card database having multiple records, each record including a virtual card identifier and a balance amount that corresponds to a single virtual smart card. Another component of the server is a smart card emulator. This is a software module that receives smart card commands and processes them in conjunction with the virtual smart card database and a hardware security module. Another component of the server is a pseudo card reader module. This is also a software module that receives smart card commands over a network, such as the Internet, and relays the commands to the smart card emulator. In this manner, the OPAL server performs a transaction over the network using one of the records in the virtual smart card database. Figure 4, pages 17- 21.

Claim 41 also recites an OPAL server for performing a transaction over a network using a virtual smart card. A component of the server is a virtual smart card database having multiple records, each record including a virtual card identifier and a balance corresponding to a single virtual smart card. Another component is a smart card emulator. This is a software component that receives smart card commands and processes the commands in conjunction with the virtual smart card database and a hardware security module. The smart card emulator is also configured to send a load request message to a

load server. The load request message indicates or contains a virtual smart card identifier and a load amount for a corresponding virtual smart card. The load amount indicates an amount of money to load onto the respective virtual smart card. Another component is a pseudo card reader module. This is also a software module that receives smart card commands over a network, such as the Internet, and relays the commands to the smart card emulator. The OPAL server performs a transaction over the network using one of the records in the virtual smart card database. Figure 4, pages 17-21; Figure 18A, page 46.

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The rejections presented for review are as follows:

A. The rejections of claims 1-8 AND 34-43 under 35 U.S.C. § 102 (e) as being anticipated by U.S. Patent No. 6,282,522 issued to *Davis et. al.*

## VII. ARGUMENT

With respect to Ground A above, the rejected claims are argued as a single group.

### A. The Final Office Action Applies a Standard for Anticipation That Is Not Legally Correct.

Applicant's reply on March 22, 2006 argued that the *Davis* reference does not teach or suggest "a smart card emulator" or "a pseudo card reader module" as required by claims 1 and 41 because there is no enabling description of a "smart card emulator" or "a pseudo card reader module" in *Davis*. In response, the Final Office Action stated that any disclosure in a reference may serve as anticipatory prior art (Final Office Action dated May 9, 2006, page 9). The Office Action stated: "...any disclosure serves as prior art and the disclosure as part of the *Davis* description that other forms including a virtual card may also be one means of the invention (column 11, lines 10-14), establishes a virtual card as prior art within the disclosure of the invention and the description of functionality therein."

The *Davis* reference states that "the functionality of stored value card 5 may be implemented in software on client terminal 204, that is, card 5 may be a 'virtual' card." This brief mention of a "virtual card" falls far short of providing an enabling description of a "virtual smart card" as described and claimed in the present application and may not be relied upon for anticipation.

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Applicant strenuously objects to the notion that "any disclosure" in a reference can serve as a basis for anticipation and asserts that the proper standard is that the disclosure in a reference must be enabling in order to be anticipatory.

In the present situation, the requirement that a description be enabling is important because Applicant is asserting that a single phrase that mentions a "virtual card" in *Davis* is not enabling and thus cannot anticipate the element of "a smart card emulator" or "a pseudo card reader module" as required by claims 1 and 41.

Section 2121.01 of the MPEP states that "the standard test is whether a reference contains an enabling disclosure," and that "mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation."

In addition to the MPEP, case law further supports Applicant's position that the reference must be enabling to be anticipatory. In order to support a rejection under §102 or §103, a prior art reference must be enabling as conveyed by the United States Supreme Court:

Patented inventions cannot be superseded by the mere introduction of a foreign publication of the kind, though of prior date, unless the description and drawings contain and exhibit a substantial representation of the patented improvement, in such full, clear, and exact terms as to enable any person skilled in the art or science to which it appertains, to make, construct, and practice the invention to the same practical extent as they would be enabled to do if the information was derived from a prior patent. Mere vague and general representations will not support such a defense, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention, and to carry it into practical use. Whatever may be the particular circumstances under which the publication takes place, the account published, to be of any effect to support such a defense, must be an account of a complete and operative invention capable of being put into practical operation.

(*Seymour v. Osbourne*, 78 U.S. 516, 555 (1870)).

Further, knowledge possessed by one skilled in the art is taken together with the disclosure of the reference to determine if the public has possession of the invention. *In re LeGrice*, 133 USPQ 365, 371-376 (CCPA 1962), (quoting *Seymour* and citing patent treatises).

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As noted above, in the present situation the requirement that a description be enabling is important because Applicant is asserting that a single phrase that mentions a "virtual card" is not enabling and thus cannot anticipate elements of claims 1 and 41. Recitation of this single phrase simply fails to enable a concept as complex as using software to emulate a smart card.

Because the Final Office Action has used a legally incorrect standard for anticipation, it is requested that the Final Action be withdrawn and that a new action be issued using the correct standard, or that a new search be performed.

#### B. Conclusion

In view of the foregoing, all of the claim rejections under 35 U.S.C. § 102 (e) as being anticipated by *Davis* cannot stand for at least the reasons discussed. The Examiner's reliance on *Davis* is misplaced, because the Examiner has failed to apply the correct legal standard for a reference to qualify as anticipatory.

In view of the foregoing, Appellants respectfully request that the Board reverse the Examiner's rejection of all pending claims. In addition, Appellants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Respectfully Submitted,

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**VIII. CLAIMS APPENDIX****CLAIMS ON APPEAL**

1. An on-line purchase and load (OPAL) server for performing a transaction over a network using a virtual smart card, said OPAL server comprising:
  - a virtual smart card database having a plurality of records, each record including a virtual card identifier and a balance corresponding to a single virtual smart card;
  - a hardware security module;
  - a smart card emulator that receives smart card commands and processes said commands in conjunction with said virtual smart card database and said hardware security module; and
  - a pseudo card reader module that receives said smart card commands over said network and relays said commands to said smart card emulator, whereby said OPAL server performs a transaction over said network using one of said records in said virtual smart card database.
2. An OPAL server as recited in claim 1 wherein said virtual card database further includes purchase algorithm identifiers, and wherein said hardware security module includes a plurality of purchase algorithms that are identified for use by one of said purchase algorithm identifiers, whereby said hardware security module may be used to perform cryptographic functions associated with a purchase.
3. An OPAL server as recited in claim 1 further comprising:
  - a user verification module that verifies a user accessing said OPAL server and generates a user identifier, said user identifier being suitable to identify one of said virtual smart card records in said card database.

4. An OPAL server as recited in claim 1 wherein said smart card emulator and said pseudo card reader module are implemented as a single software module.
5. An OPAL server as recited in claim 1 wherein said network is an internet over which said OPAL server communicates with a merchant server and a payment server to transact a purchase.
6. An OPAL server as recited in claim 1 wherein said network is an internet over which said OPAL server communicates with a bank server and a load server to load value onto said virtual smart card.
7. An OPAL server as recited in claim 1 wherein said network is an internet over which said OPAL server communicates with a web server and an authentication server to authenticate a user.
8. An OPAL server as recited in claim 1 wherein said OPAL server communicates over said network with a payment gateway for funding account authorization and clearing.

Claims 9-33 canceled.

34. An OPAL server as recited in claim 1 wherein said smart card emulator is suitable for retrieving one of said records from said virtual smart card database, increasing or decreasing said balance of said record, and then returning said record to said virtual smart card database.

35. An OPAL server as recited in claim 1 wherein each record of the virtual smart card database also includes a funding account number wherein the funding account number identifies an account that contains a monetary amount that can be loaded onto a virtual smart card.

36. An OPAL server as recited in claim 1 wherein the OPAL server is further configured to receive a purchase request message from a client terminal, wherein the purchase request message indicates a good or service to be purchased by a user, a user identifier, and a user password.

37. An OPAL Server as recited in claim 36 wherein the OPAL server is further configured to send a draw request message to a payment server, wherein the draw request message indicates an amount of money required to purchase the good or service and a merchant identifier.

38. An OPAL Server as recited in claim 37 wherein the OPAL server is further configured to receive a debit command from the payment server, wherein the debit command indicates an amount of money to debit from a respective virtual smart card.

39. An OPAL Server as recited in claim 38 wherein the smart card emulator is configured to debit itself in response to the debit command by the amount of money indicated in the debit command.

40. An OPAL Server as recited in claim 38 wherein the OPAL server is further configured to send a debit response message to the client terminal, wherein the debit response message informs the user either that the amount of money has been debited from the smart card emulator or that money has not been debited from the smart card emulator due to a lack of sufficient funds.

41. An on-line purchase and load (OPAL) server for performing a transaction over a network using a virtual smart card, said OPAL server comprising:

a virtual smart card database having a plurality of records, each record including a virtual card identifier and a balance corresponding to a single virtual smart card;

a hardware security module;

a smart card emulator that receives smart card commands and processes said commands in conjunction with said virtual smart card database and said hardware security module, the smart card emulator also configured to send a load request message to a load server, wherein the load request message indicates a virtual smart card identifier and a load amount for a respective virtual smart card, the load amount indicating an amount of money to load onto the respective virtual smart card; and

a pseudo card reader module that receives said smart card commands over said network and relays said commands to said smart card emulator, whereby said OPAL server performs a transaction over said network using one of said records in said virtual smart card database.

42. An OPAL server as recited in claim 41 wherein the OPAL server is configured to receive a load command from a load server wherein the amount of money indicated in the load request message is loaded onto the respective virtual smart card.

43. An OPAL server as recited in claim 42 wherein the smart card emulator is configured to send a load response message to a client terminal, wherein the load response message informs a user that the amount of money has been loaded onto the respective virtual smart card.

**IX. EVIDENCE APPENDIX**

NONE

**X. RELATED PROCEEDINGS APPENDIX**

NONE



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